Department of Pesticide Regulation

Paul E. Helliker
Director

Gray Davis
Governor

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Secretary, California Environmental Protection Agency

DPR Regulation No. 00-001

TITLE 3. DEPARTMENT OF PESTICIDE REGULATION

NOTICE OF PROPOSED CHANGES IN THE REGULATIONS
OF THE DEPARTMENT OF PESTICIDE REGULATION

Methyl Bromide Field Fumigations

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Methyl Bromide Field Fumigations
DPR Regulation No. 00-001

NOTICE OF PROPOSED REGULATORY ACTION

The Department of Pesticide Regulation (DPR) proposes to amend sections 6000, 6450, and 6784, and adopt sections 6450.1, 6450.2, and 6450.3 of Title 3, California Code of Regulations (3 CCR). The proposed regulatory action pertains to the use of methyl bromide when used to fumigate soil prior to the planting of agricultural crops.

SUBMITTAL OF COMMENTS

Any interested person may present comments in writing about the proposed action to the agency contact person named below. Written comments must be received no later than 5:00 p.m. on March 14, 2000. Comments regarding this proposed action may also be transmitted via e-mail (dpr00001@cdpr.ca.gov).

Public hearings have been scheduled for the times and places stated below to receive oral comments regarding the proposed regulatory changes.

DATE: March 7, 2000
TIME: 1:00 p.m.
PLACE: Salinas Community Center
940 North Main Street, Santa Lucia Room
Salinas, California 93906

DATE: March 9, 2000
TIME: 1:00 p.m.
PLACE: University of California Kearney Agricultural Center
9240 S. Riverbend Avenue
Parlier, California 93648

DATE: March 13, 2000
TIME: 1:00 p.m.
PLACE: Ontario Convention Center
2000 Convention Center Way, Room 100A/B
Ontario, California 91764

A DPR representative will preside at each hearing. Persons who wish to speak will be asked to register before the hearing. The registration of speakers will be conducted at the location of the hearing from 12:30 to 1:00 p.m. Generally, registered persons will be heard in the order of their registration. Any other person who wishes to speak at the hearing will be afforded the opportunity to do so after the

registered persons have been heard. If the number of registered persons in attendance warrants, the hearing officer may limit the time for each presentation in order to allow everyone wishing to speak the opportunity to be heard. Oral comments presented at a hearing carry no more weight than written comments.

PLAIN ENGLISH POLICY STATEMENT

DPR has determined that the proposed regulatory action does affect small businesses. The express terms of the proposed action written in plain English are available from the agency contact person named in this notice.

INFORMATIVE DIGEST/PLAIN ENGLISH OVERVIEW

Methyl bromide is a pesticide commonly used in agriculture. It is used for soil fumigation to control nematodes, insects, weed seeds, and fungi prior to planting a variety of fruit, nut, vegetable, and ornamental crops.

Methyl bromide is listed as a restricted material in 3 CCR section 6400(d). Possession and use for agricultural production purposes is allowed only under a permit from the local county agricultural commissioner (CAC). Before issuing a permit, the CAC must evaluate the application to determine whether it will cause environmental harm. Depending on the results of this review, the CAC may deny the permit or impose permit conditions including the use of specified mitigation measures. In evaluating permit applications, CACs must consider and, where appropriate, use information provided by DPR. For methyl bromide, DPR provides this information as suggested permit conditions. The suggested permit conditions represent minimum mitigation measures based on DPR's analysis of available data. CACs can impose more stringent mitigation measures dictated by the environment at the application site.

3 CCR currently contains regulations pertaining to the field fumigation use of methyl bromide. Section 6450 (Chloropicrin and Methyl Bromide-Field Fumigation) contains the current use restrictions pertaining to field fumigation for this chemical. Section 6784 (Field Fumigation) establishes the general safe-use requirements for field fumigations.

The suggested permit conditions form the foundation upon which the proposed regulatory action is based. The proposed regulatory action adopts many of the suggested permit conditions into regulation. Some will be incorporated into subsections of sections 6450 and 6784. Others will be adopted in proposed sections 6450.1, 6450.2, and 6450.3. Other portions of the suggested permit conditions, which have been found to be unnecessary or not supported by adequate scientific data, will be dropped. In addition, DPR is adopting new provisions that are not currently contained in the suggested permit conditions. These provisions include submission of a worksite plan at the time a property operator applies for a restricted materials permit, notification to neighboring property operators prior to a fumigation, extra protection for children in schools, establishment of minimum buffer zones, and new

limits on work hours for fumigation employees.

Section 6000 is being amended to include definitions for "application block" and "buffer zone."

Proposed amendments to section 6450 specify what is required in a proposed worksite plan and what information a CAC shall include when conditioning a permit to use methyl bromide. This worksite plan will be required at least seven days prior to submission of the notice of intent. Amendments to this section also include limits on the size (acreage) of an application block and specifications for the tarpaulins that are often used in field fumigations.

Proposed section 6450.1 covers notification requirements for property operators prior to fumigation of their property. DPR has specified time frames for notification of the CAC and neighboring property operators prior to a fumigation. DPR proposes that an operator of a property to be treated notify the CAC at least 48 hours prior to commencing fumigation. In addition, prior to the submission of the worksite plan, the operator of the property to be treated shall assure that operators of other properties are notified that a permit has been issued– if the other properties are within 300 feet of the outer buffer zone and contain schools, residences, hospitals, convalescent homes, onsite employee housing, or other similar sites identified by the CAC. The notification will provide the recipients with the name of the chemical(s) to be applied and the name and business address of the operator of the property, permittee, and commissioner. It will also inform these persons on how to receive additional notification of the specific date and time of the fumigation at least 48 hours in advance.

Proposed section 6450.2 describes buffer zone determination. A buffer zone is an area surrounding an application block in which certain activities are restricted to protect human health and safety from existing or potential adverse effects associated with a pesticide application. This section specifies minimum sizes for both inner and outer buffer zones, and outlines the limited activities that shall be allowed in buffer zones. This section includes a provision that no fumigation shall be made if a school, located on an adjoining property, is in session. The injection of the fumigant must be completed 36 hours prior to the start of a school session.

Proposed section 6450.3 covers the methyl bromide field fumigation methods that will be allowed under the proposed regulation.

Section 6784 proposed amendments include a definition for fumigation handling activities, limits on work hours for employees involved in those activities, and procedures for tarpaulin cutting, removal, and repair.

IMPACT ON LOCAL AGENCIES OR SCHOOL DISTRICTS

DPR has determined that the proposed regulatory action does not impose a mandate on local agencies or school districts, nor does it require reimbursement by the State pursuant to Part 7 (commencing with section 17500) of Division 4 of the Government Code, because the regulatory action does not constitute

a "new program or higher level of service of an existing program" within the meaning of section 6 of Article XIII of the California Constitution. DPR has also determined that no nondiscretionary costs or savings to local agencies or school districts are expected to result from the proposed regulatory action.

CAC offices will be the local agencies responsible for enforcing the proposed regulations. DPR anticipates that there will be no fiscal impact to these agencies because CACs will be following the same permit evaluation process that is currently performed. As discussed in the Informative Digest/Plain English Overview, the suggested permit conditions currently utilized by CACs will, to a large extent, be in regulation. Processing permit applications falls under the current pesticide enforcement program that includes a negotiated work plan. DPR negotiates with the CACs an annual work plan for enforcement activities. DPR and the CACs use the work plan to prioritize and plan pesticide enforcement activities for the coming year. The work plan allows flexibility in evaluating pesticide enforcement activity needs, establishing priority pesticide enforcement activities, and if needed, redirecting pesticide enforcement resources. It is possible that the proposed regulations will facilitate the CAC permit evaluation process for methyl bromide applications because applicators will need to provide their CACs with a worksite plan prior to a fumigation.

COSTS OR SAVINGS TO STATE AGENCIES

DPR has determined that no savings or increased costs to any State agency will result from the proposed regulatory action.

EFFECT ON FEDERAL FUNDING TO THE STATE

DPR has determined that no costs or savings in federal funding to the State will result from the proposed action.

EFFECT ON HOUSING COSTS

DPR has determined that the proposed action will have no effect on housing costs.

SIGNIFICANT ADVERSE IMPACT ON PRIVATE PERSONS AND BUSINESSES

DPR has determined that adoption of this regulation will have a significant adverse economic impact on private persons or businesses, including the ability of California businesses to compete with businesses in other states. DPR made this determination based upon an economic impact assessment performed by the California Environmental Protection Agency (Cal/EPA). This economic impact assessment is listed in the "Documents Relied Upon" section of the Initial Statement of Reasons for this proposed regulatory action and is available from DPR.

Growers who use methyl bromide for field soil fumigation prior to planting agricultural crops will incur new restrictions on the use of this pesticide. Pest control businesses that apply methyl bromide as a

field soil fumigant may also be impacted. The economic impacts include a reduction in the number of allowable methyl bromide application methods, larger buffer zone areas surrounding methyl bromide application sites, new provisions pertaining to notification of adjoining property operators prior to a fumigation, and limits on work hours for fumigation handling employees. In addition, operators of properties to be fumigated will need to complete and submit to their local CAC a worksite plan at least seven day prior to submission of the notice of intent. The worksite plan covers various details pertaining to the fumigation. Some CACs currently require some form of a worksite plan, but the extent of the information required of permit applicants varies by county.

Some businesses (growers) will incur a significant adverse economic impact because they cannot provide the required buffer zones. These are primarily growers with smaller fields, those located near sensitive areas, those who must use methods with larger buffer zone requirements, those that cannot secure permission from neighbors for an extension of a buffer zone onto adjoining property, and those that cannot use one of the available substitutes. Even those that incur a significant impact the first year of the regulation will probably be more seriously affected by the federal methyl bromide phaseout beginning in 2001. DPR cannot predict the proportion of growers that will be significantly affected.

Some growers will not incur a significant adverse economic impact because they have untreated land available to serve as a buffer zone, they can use application methods with lower buffer requirements, and apply in the off-peak application season. In addition, many growers facing high costs produce commodities such as strawberries, for which California is a dominant supplier. These growers will have some ability to recover the compliance costs by raising prices to consumers.

DPR assumes that commercial applicators will be able to pass on additional application costs to growers. In addition, DPR assumes that the acreage treated in California will be determined by the amount of methyl bromide available in the market, so the regulation will not reduce the acreage treated by the commercial applicators. Hence, commercial application businesses will not be significantly affected.

POTENTIAL COST IMPACT ON PRIVATE PERSONS OR BUSINESSES

DPR has determined that the proposed regulation is a "major regulation" as defined in Health and Safety Code section 57005. A major regulation is any Cal/EPA regulation that will have an economic impact of more than $10 million on California business. The Cal/EPA economic impact assessment estimated the first-year cost of the regulation at around $16 million. Due to data limitations, several strong assumptions were required in order to develop adjustments to the estimate. The economic impact assessment addresses these assumptions and the adjustments made to the estimates, as well as the overall reliability of the estimate.

Due to the continuing Federal phaseout of methyl bromide, the proposed regulation is expected to impose significantly lower costs in subsequent years. Beginning in 2001, the supplies available in the U.S. will be 50% of the 1991 level. It is likely that few growers will be able to secure sufficient supplies

to treat their entire planned acreage. Acreage that cannot be treated due to the reduced supply could then be used to satisfy buffer zone requirements. Estimates of the acreage required to satisfy the inner buffer zone amount to about 14% of acreage treated from 1995-98. Given the magnitude of the supply reduction, the amount of untreatable acreage could be much higher. Thus, growers will face reduced costs of satisfying the inner buffer zone requirement beginning in 2001. Growers will continue to face the costs of notification and additional partial treatments.

DPR has not identified or received any proposed alternatives that would lessen any adverse economic impact on businesses and invites you to submit proposals. Submissions may include the following considerations:

(A) The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small businesses.
(B) Consolidation or simplification of the compliance and reporting requirements for businesses.
(C) The use of performance standards rather than prescriptive standards.
(D) Exemption or partial exemption from the regulatory requirements for businesses.

IMPACT ON THE CREATION, ELIMINATION, OR EXPANSION OF JOBS

DPR has determined it is unlikely the proposed regulatory action will impact the creation or elimination of jobs, the creation of new businesses or the elimination of existing businesses, or the expansion of businesses currently doing business with the State of California.

The proposed regulation will impose a significant economic impact on some application workers but will not adversely affect the creation or elimination of jobs. The worker schedule restrictions will limit the number of hours trained application workers can remain in the fields in a 24-hour period. For some application methods, the decrease may be by more than one-half of their current daily work hours. Commercial applicators will then have to recruit more workers and redistribute work hours to them. Thus, even if there is no net decrease in the total number of labor hours demanded, some workers will be adversely affected by the redistribution. There will be no change in the number of full-time jobs, as the newly-recruited application workers will be transferred from other application activities. Most likely some workers will see additional hours available to them.

CONSIDERATION OF ALTERNATIVES

DPR must determine that no alternative considered would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons or businesses than the proposed regulatory action.

AUTHORITY

This regulatory action is taken pursuant to the authority vested by Food and Agricultural Code sections

11456, 12976, 12981, 14005, 14102, and 11502.

REFERENCE

This regulatory action is to implement, interpret, or make specific Food and Agricultural Code sections 11501, 12981, 14006, and 14102.

AVAILABILITY OF STATEMENT OF REASONS AND TEXT OF PROPOSED REGULATIONS

DPR has prepared an Initial Statement of Reasons, and has available the express terms of the proposed action, all of the information upon which the proposal is based, and a rulemaking file. A copy of the Initial Statement of Reasons and the proposed text of the regulation may be obtained from the agency contact person named in this notice. The information upon which DPR relied in preparing this proposal and the rulemaking file are available for review at the address specified below.

AVAILABILITY OF CHANGED OR MODIFIED TEXT

After the close of the comment period, DPR may make the regulation permanent if it remains substantially the same as described in the Informative Digest. If DPR does make changes to the regulation, the modified text will be made available for at least 15 days prior to adoption. Requests for the modified text should be addressed to the agency contact person named in this notice. DPR will accept written comments on any changes for 15 days after the modified text is made available.

AGENCY CONTACT

Written comments about the proposed regulatory action; requests for a copy of the Initial Statement of Reasons and the proposed text of the regulation; and inquiries regarding the rulemaking file may be directed to:

Fred Bundock, Program Specialist
Department of Pesticide Regulation
830 K Street
Sacramento, California 95814-3510
(916) 324-4194

This Notice of Proposed Action, the Initial Statement of Reasons, and the proposed text of the regulation are also available on DPR's Internet Home Page (http://www.cdpr.ca.gov).

DEPARTMENT OF PESTICIDE REGULATION

Director	Date

INITIAL STATEMENT OF REASONS AND PUBLIC REPORT
DEPARTMENT OF PESTICIDE REGULATION

Title 3. California Code of Regulations
Amend Sections 6000, 6450, and 6784, and Adopt Sections 6450.1, 6450.2, and 6450.3
Pertaining to Methyl Bromide Field Fumigations
DPR Regulation No. 00-001

PROBLEM, ADMINISTRATIVE REQUIREMENT, CONDITION, OR CIRCUMSTANCE ADDRESSED

Methyl bromide is a pesticide commonly used in agriculture. It is used for soil fumigation to control nematodes, insects, weed seeds, and fungi prior to planting a variety of fruit, nut, vegetable, and ornamental crops. Since methyl bromide is a very toxic, odorless gas, the chemical chloropicrin is added in small percentages to methyl bromide products. The tear gas effect and pungent odor of chloropicrin serves to warn people of the presence of methyl bromide. Chloropicrin, as an active ingredient, is often combined with methyl bromide in greater percentages. For soil fumigation purposes, methyl bromide is used in combination with chloropicrin to combine the greater soil penetration of methyl bromide with the higher fungal toxicity of chloropicrin. Methyl bromide and chloropicrin are injected into the soil a few weeks prior to planting. Tarpaulins are often used to cover the treated area and contain the gas until the fumigation is complete. The proposed regulatory action focuses only on field soil fumigation use of methyl bromide.

In 1993, the Parties to the Montreal Protocol (a group of nations that signed a treaty to protect the ozone layer) declared methyl bromide an ozone-depleting chemical. In November 1995, the group added methyl bromide controls to the treaty. In September 1997, the group agreed to a deadline for phasing out methyl bromide by 2005 in the developed world. Developing countries agreed to accept a methyl bromide phaseout date of 2015 and will reduce their methyl bromide use 20 percent by 2005. Once methyl bromide had been declared an ozone-depleting chemical by the Montreal Protocol, the U.S. Clean Air Act required the U.S. Environmental Protection Agency (U.S. EPA) to take action. U.S. EPA has prohibited the production and importation of methyl bromide by 2001, so it is essential that environmentally sound and economically feasible alternatives are in place and available to California farmers and pest control advisors well before the phase out date.

Methyl bromide exposure may produce harmful effects on people and the environment. Exposure results from inhalation or absorption through the skin. Despite its harmful effects to humans and its classification as an ozone-depleting substance, methyl bromide still remains one of the most widely used pesticides in the world due to its outstanding efficacy and the lack of effective alternatives.

Methyl bromide is classified as a restricted material. Possession and use for agricultural production purposes is allowed only under a permit from the local county agricultural commissioner (CAC). Before issuing a permit, the CAC must evaluate the application to determine whether it will cause environmental harm. Depending on the results of this review, the CAC may deny the permit or impose permit conditions including the use of specified mitigation measures. In evaluating permit applications, CACs must consider and, where appropriate, use information provided by the Department of Pesticide Regulation (DPR). For methyl bromide, DPR provides this information as suggested permit conditions. The suggested permit conditions represent minimum mitigation measures based on DPR's analysis of available data. CACs can impose more stringent mitigation measures dictated by the circumstances related to a specific application.

Methyl bromide use practices are defined in California by product label restrictions, regulations, and permit conditions developed over the past decade or longer. The current use practices referenced in the above legislation are the result of a series of use modifications developed by DPR beginning in 1992 that have continued to evolve as more data have become available. The principle guiding their development is that methyl bromide use should not lead to exposures that pose a risk to the health of workers or the public.

DPR has determined that many of the suggested permit conditions need to be incorporated into regulation for use of methyl bromide as a field fumigant. This is due to a number of factors. First, under the Birth Defect Prevention Act of 1984, DPR required additional health effects studies to be performed on methyl bromide and many other pesticides. DPR recently completed a risk assessment for methyl bromide. This risk assessment is contained in a 466-page document entitled *Methyl Bromide Risk Characterization Document For Inhalation Exposure* and is listed in the "Documents Relied Upon" section of this Initial Statement of Reasons. This risk characterization document has already been peer-reviewed by the U.S. Environmental Protection Agency and California's Office of Environmental Health Hazard Assessment. It is currently undergoing a yearlong peer review by a panel of the National Academy of Sciences. The proposed regulations also incorporate DPR's newly refined computer models for estimating methyl bromide emissions. When suggested permit conditions were first issued, about a dozen air monitoring studies were available. The new models incorporate more than 40 air monitoring studies.

Incorporating some of the suggested permit conditions into regulation will meet two important DPR goals. First, it will ensure the uniform enforcement of methyl bromide use practices. Statewide directives need to be consistent and unambiguous, yet allow CACs to craft permits using sound science and application specific information. Second, the regulatory process will enable the public to have a voice in developing the final regulations that pertain to field fumigation use of methyl bromide.

DPR faces a stringent timeframe for adoption of the proposed regulations. A San Francisco Superior Court decision last year ruled that Food and Agricultural Code section 14081 requires DPR to adopt regulations on field fumigation use for methyl bromide. The Court imposed a June 1, 2000 deadline for submission of the amended regulations to the Office of Administrative Law.

SPECIFIC PURPOSE AND FACTUAL BASIS

Methyl bromide is currently listed as a restricted material in Title 3, California Code of Regulations (3 CCR) section 6400(d). Section 6450 (Chloropicrin and Methyl Bromide-Field Fumigation) contains the current use restrictions pertaining to field fumigation for these two chemicals. Section 6450 requires a minimum injection depth, specifies the requirements for sealing and unsealing tarpaulins, allows the CAC or Director to approve applications without the use of tarpaulins in some situations, and provides for the use of equipment that minimizes the drip of the fumigant. Section 6784 (Field Fumigation) establishes the general safe-use requirements for field fumigations. The general safe-use conditions require that there be at least two trained employees present at the fumigation site during the introduction of the fumigant and removal of tarpaulins. Signs are also to be posted at the fumigation site. As described in the previous section, methyl bromide field fumigation use is also subject to conditions specified by the local CAC in a restricted materials permit. In evaluating a permit application, the CACs consider and often utilize what DPR commonly refers to as "suggested permit conditions." The suggested permit conditions utilized by CACs are contained in a document entitled "Methyl Bromide Proposed Soil Injection Fumigation Permit Conditions." These suggested permit conditions have been updated several times to incorporate mitigating measures determined by additional monitoring data. The suggested permit conditions document is subdivided into seven sections including: (1) Definitions, (2) Worker Safety Requirements, (3) Notice of Intent Modification, (4) Application Requirements, (5) Buffer Zone Determination, (6) Engineering Controls, and (7) Methyl Bromide Soil Fumigation Worksheet.

The *Judgment Granting Peremptory Writ of Mandate from the Superior Court of the State of California For the County of San Francisco* stated "DPR's 'Suggested Methyl Bromide Permit Conditions for Soil Injection Fumigation' do not constitute 'regulations' within the meaning of the rulemaking part of the California Administrative Procedure Act, Government Code section 11340 et seq." Therefore, DPR is not required to adopt the suggested permit conditions into regulation. As ordered by the Court, DPR must adopt amendments to its existing methyl bromide and chloropicrin field fumigation regulations found in 3 CCR section 6450. The Court ordered DPR to submit a notice of proposed regulatory action to the Office of Administrative Law no later than 180 days after the date of the writ (July 14, 1999).

The suggested permit conditions form the foundation upon which the proposed regulatory action is based. The proposed regulatory action does adopt many of the suggested permit conditions into regulation. Some will be incorporated into subsections of sections 6450 and 6784. Others will be adopted in proposed sections 6450.1, 6450.2, and 6450.3. Other portions of the suggested permit conditions, which have been found to be redundant, unnecessary, or not supported by adequate scientific data, will be dropped. In addition, DPR is adopting new provisions that were not contained in the suggested permit conditions. These provisions pertain to completion of a worksite plan by property operators prior to a fumigation, notification to neighboring property operators prior to a fumigation, extra protection for children in schools, establishment of minimum buffer zones, and new limits on work hours for employees involved in a fumigation.

The proposed regulatory action focuses upon mitigating possible acute (short-term) methyl bromide exposure hazards to the public and agricultural employees. Subsequent regulatory proposals may address chronic and subchronic (long-term) exposures. Ongoing studies by DPR and pesticide registrants pertaining both to methyl bromide and chloropicrin, will, when completed and peer-reviewed, provide the scientific basis upon which those future regulatory proposals can be based. In this proposed regulatory action, DPR has not attempted to promulgate comprehensive prescriptive regulations covering every possible methyl bromide use situation in all 58 California counties. DPR's intent is to adopt minimum regulatory standards which CACs can and should supplement with permit stipulations addressing local conditions.

During the development of the proposed regulations, DPR solicited and received written comments from a number of external stakeholders. DPR held meetings and conference calls with representatives from the public interest groups, CAC offices, agriculture, methyl bromide manufacturers, and pest control businesses. The proposed text was discussed at these sessions, and then subsequently revised many times to incorporate, to the extent feasible, the valuable suggestions received. A discussion of each section of the proposed text is found below.

6000. Definitions.

DPR proposes incorporating definitions for "application block" and "buffer zone" into 3 CCR section 6000. These definitions are needed for the proposed regulatory action. "Application block" means a field or portion of a field treated in a 24-hour period that typically is identified by visible indicators, maps, or other tangible means. A "buffer zone" is the area that surrounds a pesticide application block in which certain activities are restricted to protect human health and safety from existing or potential adverse effects associated with a pesticide application.

6450. Methyl Bromide-Field Fumigation.

Section 6450 contains the current use restrictions pertaining to field fumigation for methyl bromide and chloropicrin. Section 6450 currently requires a minimum injection depth, specifies the requirements for sealing and unsealing tarpaulins, allows the CAC or Director to approve applications without the use of tarpaulins in some situations, and provides for the use of equipment that minimizes the drip of the fumigant.

In the introductory paragraph of section 6450, DPR proposes to clarify that for the purposes of this section, field fumigation does not apply to golf courses, tree holes, potting soil, greenhouses, and other similar structures. The proposed regulatory action focuses upon preplant field soil fumigations pertaining to the production of agricultural commodities. Greenhouse, golf course, potting soil, and tree hole fumigations may be addressed in future regulatory actions. In addition, since the definition for "field" in section 6000 includes greenhouses, this statement is needed for consistency.

DPR proposes replacing existing subsection (a) with a new subsection (a) pertaining to a proposed worksite plan. The operator of the property where the fumigation will take place shall provide a proposed worksite plan to the CAC for evaluation at least seven days prior to submitting a notice of intent. Subsection (a) specifies what is to be included in the proposed worksite plan and that the plan shall be retained by the CAC for one year after permit expiration. The worksite plan must include method of application to be used, acreage, application rate, notification to adjoining property operators pursuant to section 6450.1(b)(1), and if applicable, a tarpaulin repair response plan, tarpaulin removal, and description of any activities within the outer buffer zone. DPR is not prescribing a particular form to be used for the worksite plan, although sample formats are available from DPR. CACs will be allowed to custom-tailor their own worksite plan forms in a manner that addresses local issues and in a format that works best for their county. Some counties already do this and prefer to retain this flexibility.

New subsection (b) states that the CAC, pursuant to section 6432 (Permit Evaluation), shall evaluate local conditions, the proposed worksite plan, and consider applicable information provided by DPR in "conditioning" a permit. "Conditioning," as described in section 6432, refers to additional mitigation measures prescribed by a CAC.

Current subsection (c) has been deleted since the allowable application methods will be listed in another section. New subsection (c) specifies the information CACs shall include when "conditioning" a permit. The permit conditions shall include buffer zone size and duration, work hour restrictions, specific notification plan, any other restrictions to address local conditions, and if applicable, tarpaulin repair

response plan, tarpaulin removal, and outer buffer zone activities. The CAC evaluation is to be completed before the permittee submits a notice of intent.

Proposed subsection (d) limits the size of an application block to 40 acres. DPR chose the 40 acre limit because it is the largest field size for which monitoring data is available.

New subsection (e) specifies permeability factors for tarpaulins used in fumigations. Permeability factors are currently contained in the suggested permit conditions on page 11 under "IV. Application Requirements." In the suggested permit conditions, "high barrier" tarpaulins were limited to a permeability factor of less than 8 milliliters methyl bromide per hour, per square meter, per 1,000 parts per million (ppm) of methyl bromide under tarpaulin at 30 degrees Celsius. DPR's limit of between 5 and 8 milliliters methyl bromide per hour, per square meter, per 1,000 ppm of methyl bromide under tarpaulin at 30 degrees Celsius was determined by DPR scientists based upon laboratory tests and field monitoring data. Tarpaulins meeting these gas-retention standards are added to a list of DPR-approved tarpaulins maintained by the Department. This list is available from DPR. A more detailed discussion of field monitoring data pertaining to tarpaulins is found in *Summary of Off-Site Air Monitoring For Methyl Bromide Field Fumigations*. This document is listed in the "Documents Relied Upon" section of this Initial Statement of Reasons and is also available from DPR.

Current subsection (b) has been renamed subsection (f). DPR proposes that tarpaulins shall remain in place for 120 hours. This increased retention time will also help mitigate methyl bromide exposure to workers.

Current subsection (d) has been renamed subsection (g). DPR has replaced the word "minimize" with "eliminate." Fumigation equipment is to be operated so that drip is eliminated when the injection device is lifted from the soil.

DPR has deleted the word "chloropicrin" from the title of this section. This change clarifies that the section pertains only to methyl bromide field fumigations. As discussed previously in this Initial Statement of Reasons, DPR will develop regulations focusing on chloropicrin when the scientific studies for that chemical have been completed and peer-reviewed. Until then, currently registered chloropicrin product labels cover the use requirements for field fumigation use of that pesticide.

6450.1. Methyl Bromide Field Fumigation Notification Requirements.

The suggested permit conditions contain the topic "Notice of Intent Modification" on pages 9 and 10. As discussed on those pages, a permit holder must currently notify the local CAC at least 24 hours prior

to a fumigation of any application block with methyl bromide. The CAC has the option of reducing this 24-hour notice of intent in some situations.

DPR proposes adopting section 6450.1 to incorporate into regulation specific notification requirements pertaining to methyl bromide field fumigations.

Subsection (a) "Notification to the Commissioner," specifies what information a permit holder must provide to the CAC and when it must be provided. Currently, section 6434 (Notice of Intent), subsection (b) requires the permittee to provide certain information to the CAC 24 hours prior to the use of a pesticide requiring a permit. The proposed regulatory action will require a permittee to notify the CAC at least 48 hours prior to fumigating a property and provide the hour the fumigation is intended to commence along with the information specified in section 6434(b). Some CACs already require a longer notice of intent time frame prior to methyl bromide fumigations. It enables them to have more time to review the permit and do preapplication inspections. Subsection (a) also requires that a new notice of intent be submitted to the CAC if the fumigation does not commence within 12 hours of the intended starting time specified on the original notice of intent. In addition, this subsection contains notification provisions for multiple application blocks that are to be fumigated sequentially.

Subsection (b) is entitled "Notification of Property Operators." Subsection (b) requires the operator of the property to be treated to assure that operators of specified properties within 300 feet from the outer buffer zone perimeter are notified that a permit has been issued prior to submission to the worksite plan. The specified properties are those that contain schools, residences, hospitals, convalescent homes, onsite employee housing, or other similar sites identified by the CAC. Notification shall be in writing, or by other means approved by the CAC. The notification will provide the recipients with the name of the chemical(s) to be applied and the name and business address of the operator of the property, permittee, and commissioner. It will also inform these persons on how to receive additional notification of the specific date and time of the fumigation at least 48 hours in advance.

The 300-foot notification distance is beyond the perimeter of the outer buffer zone. DPR chose the 300-foot number based, in part, upon the 300-foot distance already in 3 CCR section 6443 (Permits for Use of Phenoxy Herbicides on Timberland). In addition, DPR believes this is a reasonable distance to notify persons who may be interested in the fumigation.

DPR feels that subsection (b) provides adequate notification to persons on nearby properties, who for whatever reason, are sensitive about the issue of methyl bromide fumigations. They will be given information about the proposed fumigation, have ample opportunity to make further inquiries, and if

desired, arrange to be out of the area during the time of the fumigation.

6450.2 Methyl Bromide Field Fumigation Buffer Zone Requirements.

A buffer zone is the area that surrounds a pesticide application block in which certain activities are restricted to protect human health and safety from existing or potential adverse effects associated with a pesticide application. A buffer zone is not an exclusion zone in which all entry is prohibited. DPR's buffer zone distances are set so that methyl bromide air concentrations measured at this distance do not exceed 0.21 ppm (24-hour time-weighted average). This level is 100 times lower than the no observed effect levels established by DPR in its risk characterization for methyl bromide. DPR has determined that the .21 ppm concentration level provides an adequate margin of safety. Buffer zone sizes, measurement, and duration for each application method have been determined from both data received and evaluated by DPR and the results of monitoring studies conducted by DPR scientists. DPR data shows that, in some cases, the
0.21 ppm limit is not exceeded even with no buffer zones in place. Even though the data may show that no buffer zone is required in some situations, DPR feels that a minimum buffer zone should be required. A minimum buffer zone will provide a measure of protection against possible variations in methyl bromide air concentrations that could occur. A more detailed discussion of buffer zones and their determination is contained in *Recommendations For Methyl Bromide Buffer Zones For Field Fumigations*. This document is listed in the "Documents Relied Upon" section of this Initial Statement of Reasons and is available from DPR.

DPR proposes adopting section 6450.2 to incorporate into regulation specific requirements pertaining to buffer zones. Buffer zone sizes, measurement, and duration are currently covered in the suggested permit conditions under "V. Buffer Zone Determination" on pages 11-20. These new requirements establish minimum buffer zone distances, establish buffer zone duration, limit activities that can occur in a buffer zone, and include special protections for schools.

Subsection (a) states that buffer zone sizes shall be based upon local conditions and information provided by DPR. The CAC is to follow a specific procedure for determination of buffer zone sizes. Buffer zone sizes are calculated using computer modeling procedures that have been approved by DPR, and have undergone scientific peer review. These procedures are described in *Recommendations For Methyl Bromide Buffer Zones For Field Fumigations* and *Workbook For Gaussian Modeling Analysis of Air Concentration Measurements.* The latter document is also listed in the "Documents

Relied Upon" section of this Initial Statement of Reasons and is available from DPR.

Subsection (b) specifies how a buffer zone shall be measured. Buffer zone distances are measured from the perimeter of the application block.

Subsection (c) states that buffer zones end 60 hours after the start of the completion of injection to the application block. DPR determined the 60-hour duration based upon the decline in air concentrations over time. Monitoring data shows that the peak methyl bromide air concentrations occur within 24-36 hours of the start of an application, and decline over several days. The determination of the 60-hour duration is discussed in detail in *Recommendations For Methyl Bromide Buffer Zones For Field Fumigations* and *Summary of Off-Site Air Monitoring For Methyl Bromide Field Fumigations*.

Subsection (d) establishes two buffer zones - an inner and outer- to be determined by the CAC. These zones can be visualized as concentric rings around an application block.

Subsection (e) entitled "Inner Buffer Zone Restrictions," specifies that an inner buffer zone shall be at least 50 feet and not extend into adjoining property. Activities in an inner buffer zone are limited to fumigation handling activities and transit through the zone.

Subsection (f) entitled "Outer Buffer Zone Restrictions," specifies that an outer buffer zone shall be at least 60 feet. Only fumigation handling, transit, and CAC-approved activities are allowed in an outer buffer zone. CAC-approved activities must be identified in the restricted material permit conditions and cannot exceed 12 hours in a 24-hour period. The outer buffer zone, unlike the inner buffer zone, may extend into adjoining agricultural or commercial property with the permission of the adjoining property operator. If the adjoining property operator provides this permission, he or she must notify employees, including employees of a farm labor contractor, that an outer buffer zone has been established prior to the fumigation. The extension of an outer buffer zone into adjoining property is permissible only if the property does not contain schools, residences, convalescent homes, hospitals, onsite employee housing, or other similar sites identified by the CAC.

Subsection (g) prohibits a fumigation if a school, located on adjoining property, is in session, and mandates that no fumigation shall take place unless there is a 36-hour time frame between injection of the fumigant and the commencement of a school session. DPR intends "school session" to mean a regular school day during the hours of classroom instruction. It is not intended to include times before or after school, or on evenings, weekends, or holidays during which people may be present on the

school grounds for educational, extracurricular, administrative, maintenance, or community activities. DPR determined the 36-hour timeframe based upon the time of peak methyl bromide air concentrations. Monitoring data shows that the peak concentrations begin to decrease within 36 hours of fumigant injection. CACs will have the option, as they currently do, to require additional restrictions for applications near schools – such as an extended notification period, larger buffer zones, onsite inspections by CAC staff, and close coordination with school administrators.

6450.3 Chloropicrin and Methyl Bromide Field Fumigation Methods.

DPR proposes adding section 6450.3 in order to list the methods of soil field fumigation that will be allowed in California, the requirements for each, and some general restrictions.

Subsection (a) lists, on a method-by-method basis, the field soil fumigation methods that will be allowed in California. For each method, DPR has included application rates, equipment specifications, tarpaulin cutting and removal times (if applicable), and restricted entry intervals. An exception to the restrictions of section 6450.3(a) is allowed for experimental research purposes covered under a valid research authorization issued pursuant to section 6260.

Currently, the suggested permit conditions contain 17 different soil fumigation methods. These are summarized in Figure 2 on page 19 of that document. The suggested permit conditions also contain more detailed requirements pertaining to these application methods. Restricted entry intervals are discussed on page 4, limited work schedules on pages 6 and 7, and engineering controls pertaining to plows, chisels, and hot gas application are found on pages 27, 32-34, and 36-36.1.

DPR proposes incorporating some of these methods into section 6450.3(a) on a method-by-method basis with all the pertinent requirements for each method contained under the method heading. DPR feels that by doing so, an understanding of, and compliance with, these regulations by the regulated community will be facilitated. Some of the recommended application methods found in the suggested permit conditions have been dropped and are not included in the proposed text for this regulation. Other methods have been reorganized or combined with another method. A detailed discussion of the various methods and applicable monitoring data is found in *Recommendations For Methyl Bromide Buffer Zones For Field Fumigations*.

Application requirements for these methods are partially taken from the suggested permit conditions. This includes application rates, tractor implements and equipment type and their specifications, the need for an air fan dilution system, and restricted entry intervals.

Restricted entry intervals for each method were, as previously noted, taken out of the suggested permit conditions. DPR scientists determined these restricted entry intervals from monitoring results that show declining air concentrations over time and exposure studies during tarpaulin removal.

6784. Field Fumigation.

Section 6784 currently contains the general safe-use requirements for methyl bromide and chloropicrin for field fumigation. The general safe-use conditions require that there be at least two trained employees present at the fumigation site during the introduction of the fumigant and removal of tarpaulins. Signs are also to be posted at the fumigation site.

For the proposed regulatory action, DPR has revised and expanded section 6784 to include provisions currently found in the suggested permit conditions. These provisions include information from "II. Worker Safety Requirements" and its subsections "A. Restricted Entry Interval and Warning Sign Posting," "B. Pesticide Handler/Field Worker Requirements," "C. Limited Work Schedules," and "D. Tarpaulin Repair."

DPR has relocated current subsection (a) to proposed subsection (b)(2)(B).

Former subsection (b), which states that "signs shall be posted in accordance with section 6776(e) and remain in place until aeration is complete," is now subsection (a). The reference to section 6776(e) is incorrect and has been corrected to read "section 6776(f)."

DPR has incorporated into section 6784 a new subsection (b). The introductory sentence in subsection (b) clarifies that the subsection pertains to field soil fumigations in which methyl bromide is used singly or in combination with chloropicrin or any other pesticide or warning agent pursuant to the fumigation methods described in section 6450.3.

Subsection 6784(b)(1) clarifies and defines certain employee tasks that are considered "fumigation handling activities." These tasks include shoveling, copiloting, driving, and tarpaulin cutting and pulling.

6784(b)(2). Employer Recordkeeping.

The suggested permit conditions specify on pages 5 and 6 under "B. Pesticide Handler and Fieldworker Requirements" that employers must maintain use records for all employees involved in certain activities pertaining to methyl bromide applications and that the employers must maintain the records for two years. DPR proposes adding this requirement to section 6784(b)(2) to ensure employers track employee work hours. DPR's Enforcement staff would have access to these records to monitor compliance with the work hour restrictions proposed in section 7684(b)(4).

6784(b)(3). Employee Protection Requirements for Fumigation Handlers.

Proposed subsection (b)(3)(A) specifies that shovelers (employees that cover the edges of the tarpaulins with dirt at the end of the treatment rows) are allowed to work only at the ends of the application rows. This requirement is currently found in the suggested permit conditions on page 5 under "B. Pesticide Handler and Fieldworker Requirements," point 3.

As previously noted, DPR proposes moving and renumbering current section 6784(a) to subsection (b)(3)(B). The requirement of two employees being present during introduction of the fumigant and during removal of the tarpaulins remains as is currently in regulation.

6784(b)(4). Limited Work Hours.

The current suggested permit conditions cover time limits for persons doing various handling activities. These limits are discussed on pages 6 and 7 under "C. Limited Work Schedules." The work hour time limits for these activities vary since 17 different methyl bromide application methods are used. There are time limits for persons performing multiple work tasks, and time limits for tractor drivers and shovelers, and for copilots.

Proposed subsection 6784(b)(4) is subdivided into (A) Multiple Task Employees and (B) Fumigation Handling Activities.

(A) Multiple Task Employees specifies that an employee may work in more than one work task and/or application method in a 24-hour period as long as the total work hours do not exceed the lowest total hours allowed for any one work task or application method performed.

(B) Fumigation Handling Activities contains a table that lists the maximum employee work hours in a 24-

hour period, during the injection period and during the restricted entry interval, for the various methods of application. In the suggested permit conditions, the employee hour limits varied between 6 and 12 hours. DPR scientists have determined that employees, when involved in fumigant handling activities, should be limited to the hours specified in the table shown in B. The specified hours for some activities may be increased if the methyl bromide application rate is less than 400 pounds per acre. Monitoring results from methyl bromide applications and toxicology studies support this determination. DPR has compiled a chart summarizing the application methods, specifications, supporting data sources, and maximum work hours. This chart is contained in the worker safety recommendations entitled, *Recommended Worker Safety Mitigation Measures For Methyl Bromide Soil Fumigation Regulations*, and is listed in the "Documents Relied Upon" section of this Initial Statement of Reasons and is available from DPR.

6784(b)(5). Tarpaulin Cutting and Removal Procedures.

DPR has transferred part of current section 6450(b) to proposed section 6784(b)(5). Section 6784(b)(5)(A) requires that unsealing of tarpaulins be discontinued at any time if the presence of gas is readily evident. DPR has clarified "readily evident" by adding the phrase "(onset of eye irritation or odor)."

Proposed section 6784(b)(5)(B) covers the cutting procedures required in tarpaulin broadcast fumigations. Only mechanical methods can be used and tarpaulin panels must be cut lengthwise.

6784(b)(6). Tarpaulin Repair.

The suggested permit conditions on pages 8 and 9 under the heading "D. Tarpaulin Repair" discuss a "repair response plan" that is sometimes required by CACs in areas where tarpaulins are often damaged and need repair. The plan details the responsibilities of the pest control operator and/or the permittee with regard to detection and repair activities. In proposed section 6784(b)(6), DPR is requiring property operators to provide a "tarpaulin repair response plan" to the CAC. In addition, DPR has added a requirement that a certified applicator, using an appropriate testing device, must test the ambient air in the areas in which tarpaulins are to be repaired. Respiratory protective equipment must be worn when conducting these tests. During repair activities, employees must wear respiratory protection if there is 5 ppm or greater methyl bromide concentration in the work area. If there is less than a 5 ppm methyl bromide concentration, respiratory protection is not required, but employees involved in tarpaulin repair activities are limited to one work hour in a 24-hour period.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION

DPR has not identified any satisfactory alternatives to the proposed regulatory action that would lessen any adverse impacts, including any impacts on small businesses, and invites the submission of suggested alternatives.

As required by Chapter 418 (Senate Bill 1082, Statutes of 1993), every California Environmental Protection Agency (Cal/EPA) board, department, or office must, prior to adopting any "major regulation," perform a cost analysis of alternatives to the proposed regulation that may be submitted as comments during the public comment period, and determine whether there is a less costly, but equally effective alternative. A "major regulation" is any proposed regulation that will have a potential cost to California business enterprises in any amount exceeding $10 million in any single year.

As discussed previously in this Initial Statement of Reasons, DPR is not attempting to adopt comprehensive prescriptive regulations covering every possible methyl bromide use situation in all 58 California counties. DPR's intent is to adopt minimum regulatory standards which CACs can and should supplement with permit stipulations addressing local conditions. Even with the minimum standards proposed by this regulatory action, Cal/EPA's economic impact assessment estimated a first-year cost of $15.69 million. More stringent regulations would inflate the costs even higher.

One alternative would be a ban on the agricultural use of methyl bromide. Some public interest groups advocate such a ban. However, the economic effects could be devastating. The California Department of Food and Agriculture (CDFA) conducted an impact assessment on the economic effects resulting from a ban on the agricultural use of methyl bromide. In the CDFA document *Methyl Bromide: An Impact Assessment*, which is available on the CDFA web site, it is estimated that a $248.3 million revenue loss to California's agricultural sector would result if methyl bromide becomes unavailable for preplant soil fumigation on a variety of crops.

Another alternative is to retain the status quo. Some people may question the need for adoption of expensive new methyl bromide regulations when: (1) domestic production of methyl bromide is scheduled to end next year, (2) methyl bromide use is to be phased out by 2005, and (3) extensive ongoing research is being conducted to find satisfactory methyl bromide substitutes. However, this is not a satisfactory option for DPR for the following reasons. First, DPR has been ordered by a California Superior Court to adopt new methyl bromide regulations. Second, DPR's risk assessment, monitoring data, and computer modeling indicate that additional measures to mitigate methyl bromide exposures are needed. And third, public interest groups have expressed a strong interest in both DPR's

adoption of new methyl bromide regulations and in playing a role in developing the text of the proposed regulations.

DPR has conducted a risk assessment for methyl bromide. As previously discussed in this Initial Statement of Reasons, it is contained in the document *Methyl Bromide Risk Characterization Document For Inhalation Exposure*. The proposed regulatory action builds upon this risk assessment.

DPR has compared the risk reduction of the proposed regulatory action with other risk reduction measures adopted by DPR and other agencies. These other risk reduction measures are discussed below.

DPR conducts human health risk assessments in the form of Risk Characterization Documents (RCDs). When these RCDs indicate unacceptable cancer risks or inadequate Margins of Exposure (MOE), a spectrum of approaches are available to apply risk mitigation measures. These may include modifications to permit conditions, suspension or cancellation of product registrations, voluntary modifications of labeled use conditions by the registrant, additional use restrictions required by regulation (as in the present case), etc. Likewise, if the human health risk assessment indicates adequate risk levels or adequate MOE, no risk mitigation actions will be required or adopted.

In 1987, DPR (then part of the CDFA) completed an RCD on the pesticide Cyhexatin. This RCD indicated that MOE for developmental effects were well below the benchmark value of 100. Partially as a result of discussions with the Department regarding possible cancellation or suspension action, the registrant voluntarily withdrew the California registrations of Cyhexatin, and the registrations were cancelled in 1988.

In 1997, DPR completed an RCD on the pesticide Propoxur. This RCD indicated that the MOE for neurotoxic effects were above the benchmark of 100 and the risks of carcinogenic effects met the conventional benchmarks of 1×10^{-6} for non-occupational exposure and 1×10^{-5} for occupational exposure. As a result, additional risk reduction measures were not necessary and were not adopted.

In 1990, high ambient air levels of the pesticide 1,3-dichloropropene (Telone II) were measured. The measured air levels indicated cancer risks well in excess of the conventionally accepted benchmarks.

As a result, the Department suspended all permits for the use of Telone II in California. Limited use was reinstituted in 1994 with additional mitigation measures agreed to by the registrant. These measures included application limits, changes to application methods, and the imposition of buffer zones.

Regarding three risk reduction actions undertaken by other governmental agencies, the Office of Pesticide Programs of the U.S. EPA generally assesses risk and sets forth required risk reduction measures in their Reregistration Eligibility Documents (REDs). In 1991, U.S. EPA initiated a project to find regulatory solutions for pesticides posing acute health risks to agricultural workers. Based primarily on human incident data, U.S. EPA identified five pesticides that warranted accelerated action. In 1993, U.S. EPA met with the registrants of the five pesticides and requested voluntary risk reduction measures. In 1993, the registrant of mevinphos (one of the five pesticides) submitted proposed risk reduction measures, but U.S. EPA determined that the measures were inadequate. In 1994, based on an evaluation of the toxicological database for mevinphos, as well as human incident data, U.S. EPA determined that mevinphos was unsafe for any use. U.S. EPA was prepared to suspend all registrations; however, the registrant requested voluntary cancellation.

In 1998, U.S. EPA issued a RED for the fumigant aluminum phosphide. The RED determined that the short- and intermediate term inhalation risks were acceptable (MOE greater than 100) if specific protective (risk reduction) measures were followed. These measures were specified in the RED and were required for aluminum phosphide to be eligible for reregistration. These measures included notification of authorities, requirements for certification of applicators, placarding of fumigated areas, use of personal protective equipment, establishment of a 500-foot buffer zone around fumigated structures, institution of additional monitoring, notification of local residents, etc.

In 1999, U.S. EPA issued a RED for the fungicide Folpet. In the RED, U.S. EPA determined that the only unacceptable risks or inadequate margins of safety were for Folpet handlers, particularly mixers/loaders who came into contact with Folpet while adding it to paint during manufacture. The MOE for this activity was less than 100. As a condition for reregistration, U.S. EPA required risk reduction through the use of gloves and dust/mist respirator or equivalent engineering controls for workers adding the wettable powder to paints and stains during the manufacturing process.

EFFORTS TO AVOID UNNECESSARY DUPLICATION WITH FEDERAL REGULATIONS

The proposed regulatory action does not duplicate or conflict with federal regulations because there are no federal regulations contained within the Code of Federal Regulations that address this issue.

DOCUMENTS RELIED UPON

1. Judgment Granting Peremptory Writ of Mandate. Superior Court of the State of California for the County of San Francisco. Case No. 996187. July 14, 1999.

2. Methyl Bromide Proposed Soil Injection Fumigation Permit Conditions.

3. Segawa, Randy; Bruce Johnson; Terrell Barry. Recommendations for Methyl Bromide Buffer Zones for Field Fumigations. Memorandum to John Sanders, January 2000. Department of Pesticide Regulation.

4. Segawa, Randy; Bruce Johnson; Terrell Barry. Summary of Off-Site Air Monitoring for Methyl Bromide Field Fumigations. Memorandum to John Sanders, January 2000. Department of Pesticide Regulation.

5. Gibbons, Dennis; Thomas Thongsinthusak. Recommended Worker Safety Mitigation Measures for Methyl Bromide Soil Fumigation Regulations. Memorandum to Chuck Andrews, January 7, 2000. Department of Pesticide Regulation.

6. Johnson, Bruce, Terrell Barry, and Pamela Wofford. Workbook For Gaussian Modeling Analysis of Air Concentration Measurements (EH99-03). Department of Pesticide Regulation, Sacramento. September 1999.

7. Methyl Bromide Risk Characterization Document For Inhalation Exposure (Draft). Department of Pesticide Regulation, Medical Toxicology, Worker Health and Safety, and Environmental Monitoring and Pest Management Branches. Sacramento. October 15, 1999.

8. Enforcement Letters ENF 96-020 (April 10, 1996) and 96-047 (September 20, 1996). Updates to the Suggested Permit Conditions for Soil Injection, Greenhouse, and Tarped Potting Soil. Department of Pesticide Regulation, Pesticide Enforcement Branch.

9. Methyl Bromide: An Impact Assessment, Executive Summary. California Department of Food and Agriculture. (http://www.cdfa.ca.gov/newsinfo/publications/mbr.html).

10. Pre-notice Assessment of the Economic Impacts of the Proposed DPR Regulation Governing Field Applications of Methyl Bromide. California Environmental Protection Agency, Agencywide Economic Analysis Unit, Air Resources Board. January 2000.

TEXT OF PROPOSED REGULATIONS

Proposed deletions are indicated by ~~strikeout~~.
Proposed additions are indicated by underline.

TITLE 3. CALIFORNIA CODE OF REGULATIONS
DIVISION 6. PESTICIDES AND PEST CONTROL OPERATIONS
CHAPTER 1. PESTICIDE REGULATORY PROGRAM
SUBCHAPTER 1. DEFINITION OF TERMS
ARTICLE 1. DEFINITIONS FOR DIVISION 6

Amend section 6000 by adding, in alphabetical order, the following definitions:

6000. Definitions.

"Application block" means a field or portion of a field treated in a 24-hour period that typically is identified by visible indicators, maps, or other tangible means.

"Buffer zone" means an area that surrounds a pesticide application block in which certain activities are restricted to protect human health and safety from existing or potential adverse effects associated with a pesticide application.

NOTE: Authority cited: Sections 11456, 11502, 12111, 12781, 12976, 12981, and 14005, Food and Agricultural Code.
Reference: Sections 11408, 11410, ~~11498~~, 11501, 11701, 11702(b), 11704, 11708(a), 12042(f), 12103,12971, 12972, 12973, 12980, 12981, 13145,13146, and 14006, Food and Agricultural Code.

CHAPTER 2. PESTICIDES
SUBCHAPTER 4. RESTRICTED MATERIALS
ARTICLE 4. USE REQUIREMENTS

Amend section 6450 to read:

6450. ~~Chloropicrin and~~ Methyl Bromide Field Fumigation.

~~(a) Except as provided in (c), chloropicrin or methyl bromide, singly or in combination, for field fumigation of soil by injection, shall be applied at a minimum depth of six inches, unless otherwise specified by the registered label for the intended use and covered with a gas confining tarp of a thickness approved by the commissioner or director.~~

The provisions of this section and sections 6450.1, 6450.2, 6450.3, and 6784(b) pertain to field soil fumigation use requirements using methyl bromide, singly or in combination with chloropicrin or any other pesticide or warning agent. For purposes of these sections, field soil

fumigation does not apply to golf courses, tree holes, potting soil, and greenhouses and other similar structures.

(a) Notwithstanding section 6428, the operator of the property shall submit a proposed worksite plan to the commissioner for evaluation at least 7 days prior to submitting a notice of intent. The proposed worksite plan shall include, but is not limited to, method of application to be used, acreage and identification of each application block to be treated, application rate to be used, notification procedure to property operators pursuant to section 6450.1(b), and if applicable, tarpaulin repair response plan, tarpaulin removal, and description of any activities within the outer buffer zone as specified in section 6450.2(f). The commissioner shall retain the proposed worksite plan for one year after the expiration of the permit.

(b) The commissioner, pursuant to section 6432, shall evaluate local conditions, the proposed worksite plan, and consider applicable information provided by the Department in conditioning the permit.

(c) The commissioner shall include at least the following when conditioning a permit: the size and duration of the buffer zones, work hour restrictions, specific notification procedure, any other restrictions to address local conditions, and if applicable, tarpaulin repair response plan and tarpaulin removal. The commissioner shall complete the evaluation and condition the permit prior to the submission of the notice of intent.

(d) An application block shall not exceed 40 acres.

(e) Tarpaulins shall have a permeability factor of between 5 and 8 milliliters methyl bromide per hour, per square meter, per 1,000 parts per million of methyl bromide under tarpaulin at 30 degrees Celsius, and be approved by the Department. A list of approved tarpaulins is available from the Department.

(~~b~~f) ~~Gas confining~~ ~~t~~Tarpaulins shall be buried under at least four inches of firmly packed soil at the end of the rows ~~along all edges~~. The tarpaulins shall remain in place for the time specified in section 6450.3. ~~until at least 48 hours have elapsed since any chloropicrin or methyl bromide was applied. Unsealing of tarps shall be discontinued at any time if the presence of gas is readily evident~~.

~~(c) The commissioner or director may approve use of chloropicrin or methyl bromide singly or in combination without tarping when he determines that the use will not be hazardous to persons, wildlife or the environment.~~

(g) Fumigation equipment shall be operated in such a manner as to eliminate pesticide drip when the injection device is lifted from the soil.

NOTE: Authority cited: Sections ~~407~~ 11456, 12976, 12981, 14005 and 14102, Food and Agricultural Code.
Reference: Sections 11501, 12981, 14006 and 14102, Food and Agricultural Code.

Adopt section 6450.1 to read:

6450.1. Methyl Bromide Field Fumigation Notification Requirements.

(a) Notification to the Commissioner.

(1) Notwithstanding section 6434, the operator of the property shall assure that the commissioner is notified (notice of intent) at least 48 hours prior to commencing fumigation.

The notice of intent shall indicate the hour the fumigation is intended to commence and the information specified in section 6434(b).

(2) The fumigation shall not commence sooner than the intended starting time or later than 12 hours after the intended starting time specified on the notice of intent.

(3) If fumigation of an application block does not commence within the time specified in (a)(2), a new notice of intent must be submitted but no 48 hour waiting period is needed unless required by the commissioner.

(4) For multiple application blocks to be fumigated sequentially, the commissioner may allow one notice of intent that includes an application schedule for all the application blocks in lieu of a separate notice of intent for each application block to be fumigated. The schedule must specify the date and time each application block is intended to be fumigated.

(b) Notification to Property Operators. Prior to submission of the worksite plan, the operator of the property to be treated shall assure that operators of the following properties receive notification that a permit has been issued if the property is within 300 feet from the perimeter of the outer buffer zone: properties that contain schools, residences, hospitals, convalescent homes, onsite employee housing, or other similar sites identified by the commissioner.

(1) Notification shall be in writing, or by other means approved by the commissioner. The notification shall include the name of the chemical(s), name and business address of the operator of the property, permittee, and commissioner, and the opportunity to receive notification of the specific date and time of the fumigation.

(2) The operator of the property or permittee shall assure that specific date and time of the start of the fumigation and anticipated expiration of buffer zones are provided to those persons notified in (b) requesting the information. The information shall be provided at least 48 hours prior to the fumigation.

NOTE: Authority cited: Sections 11456, 12976, 12981, 14005 and 14102, Food and Agricultural Code.
Reference: Sections 11501, 12981, 14006 and 14102, Food and Agricultural Code.

Adopt section 6450.2 to read:

6450.2. Methyl Bromide Field Fumigation Buffer Zone Requirements.

(a) The commissioner shall determine buffer zone sizes based upon local conditions and information provided by the Department. The commissioner shall follow a specific procedure for determination of buffer zone sizes which has undergone scientific peer review.

(b) The operator of the property to be treated shall assure that all buffer zone distances be measured from the perimeter of the application block.

(c) The buffer zone restrictions shall end 60 hours after the completion of the injection to the application block.

(d) Two buffer zones, an inner and outer, shall be approved by the commissioner.

(e) Inner Buffer Zone Restrictions.

(1) The inner buffer zone shall be at least 50 feet and shall not extend into adjoining property.

(2) The operator of the property to be treated shall assure that only fumigation handling activities and transit be allowed within the inner buffer zone.

(f) Outer Buffer Zone Restrictions.

(1) The outer buffer zone shall be at least 60 feet.

(2) No persons shall be allowed within the outer buffer zone except to transit, perform fumigation handling activities, and commissioner-approved activities as identified in the restricted materials permit conditions. In no instance shall the activities exceed 12 hours in a 24-hour period.

(3) The outer buffer zone may extend into adjoining agricultural and commercial property with permission from the adjoining property operator. The outer buffer zone shall not extend into adjoining properties that contain schools, residences, convalescent homes, hospitals, onsite employee housing, or other similar sites identified by the commissioner.

(4) The adjoining property operator specified in (3) above, shall notify employees, including those of a farm labor contractor, that an outer buffer zone has been established on the property. Employee notification shall include information required in section 6450.1(b)(1) and (2).

(5) An adjoining property operator who gives such permission shall notify employees, and the farm labor contractor's employees, if applicable, 24 hours prior to fumigation. Notification to farm labor contractor employees may be done by giving written notice to the farm labor contractor who shall then give the notice to the employee.

(g) No fumigation shall be made if a school, located on an adjoining property, is in session. When a school is located on an adjoining property, the injection shall be completed 36 hours prior to the start of a school session. School session shall be those times when students are attending scheduled classes.

NOTE: Authority cited: Sections 11456, 12976, 12981, 14005 and 14102, Food and Agricultural Code.
Reference: Sections 11501, 12981, 14006 and 14102, Food and Agricultural Code.

Adopt section 6450.3 to read:

6450.3. Methyl Bromide Field Fumigation Methods.

(a) The fumigation shall be made only in accordance with the following restrictions, except for experimental research purposes pursuant to a valid research authorization issued according to section 6260.

(1) Nontarpaulin/Shallow/Bed

(A) Application rate shall not exceed 200 pounds of methyl bromide per acre.

(B) The application tractor shall be equipped with an air fan dilution system.

(C) Rearward-curved (swept-back) chisels shall be used with:

(i) closing shoes and bed-shaper, or closing shoes and compaction roller; and

(ii) chisel injection points positioned beneath and behind the closing shoes.

(D) Injection depth shall be between 10 and 15 inches. The injection depth to preformed beds must not be below the bed furrow.

(E) Chisel spacing shall be 40 inches or less.

(F) The soil shall not be disturbed for at least 3 days (72 hours) following completion of injection to the application block.
(G) The application block restricted entry interval shall be 3 days.

(2) Nontarpaulin/Deep/Broadcast
(A) Application rate shall not exceed 400 pounds of methyl bromide per acre.
(B) Forward-curved chisel shall be used with:
(i) An application tractor equipped with an air fan dilution system and the injection depth shall be at least 20 inches; or
(ii) Closing shoes and compaction roller and the injection depth shall be at least 24 inches.
(C) Chisel spacing shall be 68 inches or less.
(D) The soil shall not be disturbed for at least 4 days (96 hours) following completion of injection to the application block.
(E) The application block restricted entry interval shall be 4 days.

(3) Tarpaulin/Shallow/Broadcast
(A) Application rate shall not exceed 400 pounds of methyl bromide per acre.
(B) Application shall be made using either:
(i) An application tractor equipped with an air fan dilution system, and with a plow consisting of horizontal v-shaped blades mounted by a vertical arm to the tool bar. The fumigant shall be injected laterally beneath the soil surface; or
(ii) Rearward-curved (swept-back) chisels, closing shoes, and compaction roller shall be used.
(C) Injection depth shall be between 10 and 15 inches.
(D) Chisel spacing shall be 12 inches or less.
(E) The tarpaulin shall be laid down simultaneously (with fumigant injection) by tarpaulin-laying equipment mounted on the application tractor.
(F) The tarpaulin shall not be cut until a minimum of 5 days (120 hours) following completion of injection to the application block.
(G) Tarpaulin removal shall begin no sooner than 24 hours after tarpaulin cutting has been completed.
(H) The application block restricted entry interval shall end at completion of tarpaulin removal, and shall be at least 6 days.

(4) Tarpaulin/Shallow/Bed
(A) Application rate shall not exceed 250 pounds of methyl bromide per acre.
(B) Rearward-curved (swept-back) chisels shall be used with either:
(i) Closing shoes and compaction roller. The closing shoes shall cover the chisel marks with soil just ahead of the compaction roller, and the tarpaulin shall be laid down simultaneously (with fumigant injection) by tarpaulin-laying equipment mounted on the application tractor; or
(ii) Bed shaper. The chisels shall be placed with the injection point under the bed shaper, and the tarpaulin shall be laid down simultaneously (with fumigant injection) by tarpaulin-laying equipment mounted on the application tractor; or

(iii) Combination bed former and bed shaper. The chisels shall be placed between the bed former and the bed shaper. The tractor with the tarpaulin-laying equipment shall immediately follow the application tractor.

(C) Injection depth shall be between 6 and 15 inches. The injection depth to preformed beds must not be below the bed furrow.

(D) Chisel spacing shall be 12 inches or less.

(E) The tarpaulin shall not be cut until at least 5 days (120 hours) following completion of injection to the application block.

(F) If tarpaulins are removed before planting, tarpaulin removal shall begin no sooner than 24 hours after tarpaulin cutting has been completed. The application block restricted entry interval shall end at completion of tarpaulin removal, and shall be at least 6 days.

(G) If tarpaulins are not to be removed before planting, the application block restricted entry interval shall end 48 hours after holes have been cut for planting and shall be at least 7 days; or at least 14 days and the methyl bromide air concentration must test less than 5 parts per million underneath the tarpaulin.

(5) Tarpaulin/Deep/Broadcast

(A) Application rate shall not exceed 400 pounds of methyl bromide per acre.

(B) Forward-curved chisels shall be used with either:

(i) An air fan dilution system on the application tractor; or

(ii) Closing shoes and compaction roller.

(C) Injection depth shall be at least 20 inches.

(D) Chisel spacing shall be 66 inches or less.

(E) The tarpaulin shall be laid down simultaneously (with fumigant injection) by tarpaulin-laying equipment mounted on the application tractor.

(F) The tarpaulin shall not be cut until at least 5 days (120 hours) following completion of injection to the application block.

(G) Tarpaulin removal shall begin no sooner than 24 hours after tarpaulin cutting has been completed.

(H) The application block restricted entry interval shall end at completion of tarpaulin removal, and shall be at least 6 days.

(6) Drip System – Hot Gas

A hot gas application through a subsurface drip irrigation system to tarpaulin-covered beds may be used if all of the following criteria are met:

(A) Application rate shall not exceed 225 pounds of methyl bromide per acre.

(B) The fumigant shall be injected beneath the soil surface at a minimum depth of one inch.

(C) The portion of the drip system used in the fumigation shall be physically disconnected from the main water supply during the fumigation to prevent possible contamination of the water supply.

(D) All fittings and emitters shall be buried in the soil to a minimum depth of 1 inch.

(E) Prior to the start of the fumigation, all drip tubing shall be checked for blockage, and the irrigation system connections and fittings checked for blockage and leaks using pressurized air and/or water. The end of each drip tubing shall be placed under the tarpaulin prior to introduction of fumigant.

(F) The tarpaulin shall be placed and inspected for tears, holes, or improperly secured edges prior to fumigating. Repairs and adjustments shall be made before the fumigation begins.
(G) Daily, before starting the fumigation, all fittings above ground and outside of the tarpaulin shall be pressure tested with compressed air, water, or nitrogen gas to a maximum pressure of 50 pounds per square inch. A soap solution shall be used to check the fittings for leaks if using air or nitrogen. All apparent leaks shall be eliminated prior to the fumigation. All drip tubing with emitters connected to the distribution manifold not covered by the tarpaulin shall be sealed to prevent fumigant loss through the emitters.
(H) Prior to introducing the fumigant, the system shall be purged of water by means of pressurized gas such as CO_2 or nitrogen.
(I) The system shall be purged prior to disconnecting any line containing the fumigant.
(J) After purging, drip tubing shall be pinched off and then disconnected from the distribution manifold. All disconnected tubing leading into the treated field shall be secured to prevent gas from escaping.
(K) All fittings used for connecting or disconnecting the heat exchanger to the irrigation system manifold shall be of a positive shut-off design.
(L) All persons shall wear the eye protection specified on the label when working with a manifold system or tubing containing the fumigant under pressure.
(M) The entire fumigation system (heater, valves, and manifold) shall be purged of the fumigant at the end of each day's fumigation.
(N) The tarpaulin shall not be cut until at least 5 days (120 hours) following completion of injection to the application block.
(O) If tarpaulins are removed before planting, tarpaulin removal shall begin no sooner than 24 hours after tarpaulin cutting has been completed. The application block restricted entry interval shall end at completion of tarpaulin removal and shall be at least 6 days.
(P) If tarpaulins are not to be removed before planting, the application block restricted entry interval shall end 48 hours after holes have been cut for planting and shall be at least 7 days; or at least 14 days and the methyl bromide air concentration must test less than 5 parts per million underneath the tarpaulin.

NOTE: Authority cited: Sections 11456, 12976, 12981, 14005 and 14102, Food and Agricultural Code.
Reference: Sections 11501, 12981, 14006 and 14102, Food and Agricultural Code.

CHAPTER 3. PEST CONTROL OPERATIONS
SUBCHAPTER 3. PESTICIDE WORKER SAFETY
ARTICLE 4. FUMIGATION

Amend section 6784 to read:

6784. Field Fumigation.

~~(a) Whenever methyl bromide or chloropicrin is used for field fumigation, at least two trained employees shall be present during introduction of the fumigant and removal of tarps, if used.~~

(~~b~~a)Signs shall be posted in accordance with ~~S~~section 6776~~(e)~~(f) and shall remain in place until aeration is complete.

(b) The provisions of this subsection pertain to field soil fumigations using methyl bromide, singly or in combination with chloropicrin or any other pesticide or warning agent applied pursuant to the fumigation methods described in section 6450.3.

(1) For purposes of this subsection, fumigation handling activities includes an employee involved in assisting with covering the tarpaulin at the end of the rows (shoveling); observing the overall operation, checking tarpaulin placement, changing cylinders (copiloting); operating an application rig (driving); and tarpaulin cutting and pulling.

(2) Employer Recordkeeping. The employer shall maintain use records for all employees involved in application, aeration, tarpaulin repair, and tarpaulin removal activities. The records shall identify the person, work activity(ies), date(s), duration of handling, the U.S. Environmental Protection Agency Registration Number, and the brand name of the methyl bromide product handled. The employer shall maintain these use records at a central location for two years.

(3) Employee Protection Requirements for Fumigation Handlers.

(A) Employees involved primarily in shoveling shall work only at the ends of the application rows.

~~(a)~~(B) Whenever methyl bromide, singly or in combination with chloropicrin or any other pesticide or warning agent is used for field soil fumigation, at least two trained employees shall be present during introduction of the fumigant and removal of tarpaulins, if used.

(4) Limited Work Hours.

(A) Multiple Task Employees. An employee may work in more than one work task and/or application method in a 24-hour period as long as the employee's total work hours do not exceed the lowest total hours specified below for any one work task or application method performed.

(B) Fumigation Handling Activities. No employee may work in fumigation handling activities more than the hours specified below, in a 24-hour period, during the injection period and during the restricted entry interval.

Fumigation Method/Activities	Maximum Work Hours in a 24-Hour Period
Nontarpaulin/Shallow/Bed Driving, Shoveling, and Copiloting	4
Nontarpaulin/Deep/Broadcast Driving, Shoveling, and Copiloting	4*
Tarpaulin/Shallow/Broadcast Driving, Shoveling, and Copiloting Tarpaulin Cutting Tarpaulin Pulling	3* 4 7
Tarpaulin/Shallow/Bed Driving, Shoveling, and Copiloting Tarpaulin Cutting Tarpaulin Pulling	4 4 7
Tarpaulin/Deep/Broadcast Driving, Shoveling, and Copiloting Tarpaulin Cutting Tarpaulin Pulling	3* 4 7
Drip System – Hot Gas Applicators Tarpaulin Cutting Tarpaulin Pulling	2 4 7

*Work hours may be increased if the methyl bromide application rate is less than 400 pounds per acre using the formula:

$$\left(\frac{\text{400 pounds of methyl bromide}}{\text{application rate}}\right) \times \text{maximum work hours in a 24-hour period}$$

(5) Tarpaulin Cutting and Removal Procedures

(A) Unsealing of tarpaulins shall be discontinued if the presence of gas is readily evident (onset of eye irritation or odor).

(B) Tarpaulins used for broadcast fumigations shall be cut using only mechanical methods (all terrain vehicle or a tractor with a cutting wheel). Each tarpaulin panel used for broadcast fumigations shall be cut lengthwise.

(6) Tarpaulin Repair.

(A) The operator of the property shall assure that a "tarpaulin repair response plan" is provided to the commissioner. The tarpaulin repair response plan shall identify the responsibilities of the pest control operator and/or the permittee with regard to tarpaulin damage detection and repair activities. At a minimum, the tarpaulin repair response plan shall indicate the parties responsible for the repair and incorporate the applicable elements listed in (B) below.

(B) Unless otherwise identified in a "tarpaulin repair response plan", the decision to conduct tarpaulin repair shall be made by a certified applicator (the permittee, the permittee's authorized representative, or the pest control operator) on a job-by-job basis. The decision should be based on, but not limited to, hazard to the public, residents or workers; proximity to occupied structures, size of the damaged area(s); timing of damage; feasibility of repair; and environmental factors such as wind speed and direction.

(C) The ambient air in the areas of the tarpaulin to be repaired must be tested for methyl bromide concentration by the certified applicator, using an appropriate testing device. The certified applicator must wear respiratory protective equipment when conducting these tests.

(D) All projected repair work areas must test less than 5 parts per million methyl bromide before any employee without respiratory protection shall be allowed to enter and conduct tarpaulin repair. Such employee is limited to one (1) work hour in a 24-hour period.

NOTE: Authority cited: Sections ~~407~~ 11456 and 12981, Food and Agricultural Code. Reference: Section 12981, Food and Agricultural Code.